

TP-500-00
June 16, 2000

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

LABORATORY TEST PROCEDURE
FOR
FMVSS 500, Low-Speed Vehicles



SAFETY ASSURANCE
Office of Vehicle Safety Compliance
Room 6111, NSA-30
400 Seventh Street, SW
Washington, DC 20590

OVSC LABORATORY TEST PROCEDURE NO. 500
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REVISION CONTROL LOG
FOR OVSC LABORATORY TEST PROCEDURE
TP 500, LOW-SPEED VEHICLES

TEST PROCEDURE		FMVSS 500		DESCRIPTION
REV. No.	DATE	AMENDMENT	EFFECTIVE DATE	
00	6/16/00	63FR33194	6/17/98	Final Rule issued
01				
02				
03				
04				
05				

1. PURPOSE AND APPLICATION

The Office of Vehicle Safety Compliance (OVSC) provides contractor laboratories with Laboratory Test Procedures as guidelines for obtaining compliance test data. The data are used to determine if a specific vehicle or item of motor vehicle equipment meets the minimum performance requirements of the subject Federal Motor Vehicle Safety Standard (FMVSS). The purpose of the OVSC Laboratory Test Procedures is to present a uniform testing and data recording format, and provide suggestions for the use of specific equipment and procedures. These Laboratory Test Procedures do not constitute an endorsement or recommendation for use of any product or method. If any contractor views any part of an OVSC Laboratory Test Procedure to be in conflict with a Federal Motor Vehicle Safety Standard (FMVSS) or observes deficiencies in a Laboratory Test Procedure, the contractor is required to advise the Contracting Officer's Technical Representative (COTR) and resolve the discrepancy prior to the start of compliance testing.

Every contractor is required to submit a detailed test procedure to the COTR before initiating the compliance test program. The procedure must include a step-by-step description of the methodology to be used. The contractor's test procedure shall contain a complete listing of test equipment with make and model number and a detailed check-off sheet. The list of test equipment shall include instrument accuracy and calibration dates. All equipment shall be calibrated in accordance with the manufacturer's instructions. There shall be no contradictions between the Laboratory Test Procedure and the contractor's in-house test procedure. Written approval of the in-house test procedures shall be obtained from the COTR before initiating the compliance test program. The OVSC Laboratory Test Procedures are not intended to limit or restrain a contractor from developing or utilizing any testing techniques or equipment, which will assist in procuring the required compliance test data. However, the application of any such testing technique or equipment is subject to prior approval of the COTR.

NOTE: The OVSC Laboratory Test Procedures, prepared for the limited purpose of use by independent laboratories under contract to conduct compliance tests for the OVSC, are not rules, regulations or NHTSA interpretations regarding the meaning of a FMVSS. The Laboratory Test Procedures are not intended to limit the requirements of the applicable FMVSS(s). In some cases, the OVSC Laboratory Test Procedures do not include all of the various FMVSS minimum performance requirements. Recognizing applicable test tolerances, the Laboratory Test Procedures may specify test conditions that are less severe than the minimum requirements of the standard. In addition, the Laboratory Test Procedures may be modified by the OVSC at any time without notice, and the COTR may direct or authorize contractors to deviate from these procedures, as long as the tests are performed in a manner consistent with the standard itself and within the scope of the contract. Laboratory Test Procedures may not be relied upon to create any right or benefit in any person. Therefore, compliance of a vehicle or item of motor vehicle equipment is not necessarily guaranteed if the manufacturer limits its certification tests to those described in the OVSC Laboratory Test Procedures.

2. GENERAL REQUIREMENTS

FMVSS 500 specifies requirements for Low-Speed Vehicles (LSV).

Each LSV shall have a maximum speed attainable in 1.6 kilometers (km) of no more than 40.0 kilometers per hour (km/hr).

Each LSV shall be equipped with ten items of safety equipment and a compliance certification label.

This Laboratory Test Procedure is applicable to an LSV, which has electric propulsion. A different procedure will apply to an LSV with an internal combustion engine.

TEST DATA LOSS

A compliance test is not to be conducted unless all of the various test conditions specified in the applicable OVSC Laboratory Test Procedure have been met. Failure of a contractor to obtain the required test data and to maintain acceptable limits on test parameters in the manner outlined in the applicable OVSC Laboratory Test Procedure may require a retest at the expense of the contractor. The retest costs will include the cost of leasing a replacement LSV and all costs associated with conducting the retest. The original test specimen (vehicle or equipment item) used for the invalid test shall remain the property of OVSC, and the retest specimen shall remain the property of the contractor. If there is a test failure, the contractor shall retain the retest specimen for a period not exceeding 180 days. If there is no test failure, the contractor may dispose of the test specimen upon notification from the COTR that the final test report has been accepted.

The Contracting Officer of NHTSA is the only NHTSA official authorized to notify the contractor that a retest is required. The retest shall be completed within two (2) weeks after receipt of notification by the Contracting Officer that a retest is required. If a retest is conducted, no test report is required for the original test.

3. SECURITY

The contractor shall provide appropriate security measures to protect the OVSC test vehicles from unauthorized personnel during the entire compliance-testing program. The contractor is financially responsible for any acts of theft and/or vandalism, which occur during the storage of test vehicles. Any security problems, which arise, shall be reported by telephone to the Industrial Property Manager (IPM), Office of Contracts and Procurement, within two working days after the incident. A letter containing specific details of the security problem will be sent to the IPM (with copy to the COTR) within 48 hours. The contractor shall protect and segregate the data that evolves from compliance testing before and after each vehicle test. No information concerning the vehicle safety compliance-testing program shall be released to anyone except the COTR, unless specifically authorized by the COTR or the COTR's Branch Chief or Division Chief.

NOTE: NO INDIVIDUALS, OTHER THAN CONTRACTOR PERSONNEL DIRECTLY INVOLVED IN THE COMPLIANCE TESTING PROGRAM OR OVSC PERSONNEL, SHALL BE ALLOWED TO WITNESS ANY VEHICLE COMPLIANCE TEST UNLESS SPECIFICALLY AUTHORIZED BY THE COTR.

4. GOOD HOUSEKEEPING

Contractors shall maintain the entire vehicle compliance testing area, test fixtures and instrumentation in a neat, clean and painted condition with test instruments arranged in an orderly manner consistent with good test laboratory housekeeping practices.

5. TEST SCHEDULING AND MONITORING

The contractor shall submit a vehicle test schedule to the COTR prior to conducting the first compliance test. Tests shall be completed as required in the contract.

Scheduling of vehicle tests shall be adjusted to permit vehicles to be tested to other FMVSSs as may be required by the OVSC. All vehicle compliance testing shall be coordinated with the COTR in order to allow monitoring by the COTR and/or other OVSC personnel if desired.

6. TEST DATA DISPOSITION

The contractor shall make all vehicle preliminary compliance test data available to the COTR at the test site within four hours after the test. Final test data, including digital printouts and computer generated plots (if applicable), shall be furnished to the COTR within five working days. Additionally, the contractor shall analyze the preliminary test results as directed by the COTR.

All backup data sheets, strip charts, recordings, plots, technician's notes, etc., shall be either sent to the COTR or destroyed at the conclusion of each delivery order, purchase order, etc.

7. GOVERNMENT FURNISHED PROPERTY (GFP)

ACCEPTANCE OF TEST VEHICLES

The Contractor has the responsibility of accepting each GFP test vehicle whether delivered by a new vehicle dealership or another vehicle transporter. In both instances, the contractor acts in the OVSC's behalf when signing an acceptance of the GFP test vehicle delivery. When a new GFP vehicle is delivered, the contractor must check to verify the following:

7. GOVERNMENT FURNISHED PROPERTY (GFP)....Continued

- A. All options listed on the "window sticker" are present.
- B. Tires and wheel rims are new and the same as listed.
- C. There are no interior or exterior flaws.
- D. The vehicle has been properly prepared and is in running condition.
- E. Owner's Manual, warranty document, consumer information, and extra set of keys are present, and

In addition, if a government-contracted transporter delivers the test vehicle, the contractor shall check for damage, which may have occurred during transit.

A "Vehicle Condition" form will be supplied to the contractor by the COTR when the test vehicle is transferred from the new car dealer or between test contracts. The upper half of the form describes the vehicle condition prior to test in detail, and the lower half provides space for a description of the posttest condition. The Vehicle Condition form must be completed and delivered to the COTR with the Final Test Report or the report will NOT be accepted.

NOTIFICATION OF COTR

The COTR must be notified within 24 hours after a vehicle has been delivered. In addition, if any discrepancy or damage is found at the time of delivery, a copy of the Vehicle Condition form shall be sent to the COTR immediately.

8. CALIBRATION OF TEST INSTRUMENTS

Before the contractor initiates the safety compliance test program, a test instrumentation calibration system shall be implemented and maintained in accordance with established calibration practices. The calibration system shall include the following as a minimum:

- A. Standards for calibrating the measuring and test equipment will be stored and used under appropriate environmental conditions to assure their accuracy and stability.
- B. All measuring instruments and standards shall be calibrated by the contractor, or a commercial facility, against a higher order standard at periodic intervals NOT TO EXCEED TWELVE (12) MONTHS! Records, showing the calibration trace ability to the National Institute of Standards and Technology (NIST), shall be maintained for all measuring and test equipment.

8. CALIBRATION OF TEST INSTRUMENTS....Continued

- C. All measuring and test equipment and measuring standards will be labeled with the following information:
 - (1) Date of calibration
 - (2) Date of next scheduled calibration
 - (3) Name of the technician who calibrated the equipment
- D. A written calibration procedure shall be provided by the contractor, which includes as a minimum the following information for all measurement and test equipment:
 - (1) Type of equipment, manufacturer, model number, etc.
 - (2) Measurement range
 - (3) Accuracy
 - (4) Calibration interval
 - (5) Type of standard used to calibrate the equipment (calibration trace ability of the standard must be evident)
- E. Records of calibration for all test instrumentation shall be kept by the contractor in a manner, which assures the maintenance of established calibration schedules. All such records shall be readily available for inspection when requested by the COTR. The calibration system will need the acceptance of the COTR before the test program commences.

Further guidance is provided in the International Standard ISO 10012-1, "Quality Assurance Requirements for Measuring Equipment" and American National Standard ANSI/NCSL Z540-1, "Calibration Laboratories and Measuring and Test Equipment - General Requirements".

9. PHOTOGRAPHIC DOCUMENTATION

Photographs shall be 8 x 10 inches, and properly focused for clear images. A label or placard identifying the test vehicle model, NHTSA number and date or item of equipment part number and date shall appear in each photograph and must be legible. Each photograph shall be labeled as to the subject matter.

As a minimum the following photographs shall be included in each final test report, where applicable:

9. PHOTOGRAPHIC DOCUMENTATION....Continued

- A. 3/4 frontal view from left side of vehicle, with and without removable doors, windows, etc.
- B. 3/4 rear view from right side of vehicle, with and without removable doors, windows, etc.
- C. Close-up view of vehicle's certification label
- D. Close-up view of vehicle's tire information placard or label
- E. Close-up view of other vehicle labels (instructions, hazard, warning, etc.)
- F. Close-up view of speed measuring instrumentation mounted on vehicle
- G. Photos required to document required safety equipment
- H. Photos to document any apparent test failure

10. DEFINITIONS

Low-Speed Vehicle (LSV) - means a 4-wheeled motor vehicle, other than a truck, whose speed attainable in 1.6 km is more than 32.0 km/hr and not more than 40.0 km/hr on a paved level surface.

Unloaded Vehicle Weight (UVW) - means the weight of a vehicle with maximum capacity of all fluids necessary for operation of the vehicle, but without cargo, occupants, or accessories that are ordinarily removed from the vehicle when they are not in use.

11. SUGGESTED TEST EQUIPMENT

The following test equipment or equivalent shall be used:

- A. Non-contact or mechanical fifth wheel to measure vehicle velocity, minimum 50km/hr range with an accuracy of ± 0.5 km/hr.
- B. On-board Data Acquisition System (DAS), i.e. computer, or equivalent, to measure and record the vehicle velocity and distance traveled for the entire duration of the speed runs. The DAS shall have accuracy equal to or greater than the fifth wheel. The DAS readout shall provide data to the 0.1 km/hr (velocity) and 0.1 m (distance traveled). The road speed data shall be sampled and recorded along with the distance traveled at least once per second for the duration of the speed run.

11. SUGGESTED TEST EQUIPMENT....Continued

- C. On-board power supply, i.e. battery, to provide necessary power for the DAS and velocity measuring equipment.
- D. Temperature gage to record ambient test temperatures, 0 to 38° C with an accuracy of $\pm 0.5^{\circ}$ C and a scale graduation of 1 deg.
- E. Anemometer to measure wind speed. Ten m/s range with ± 1 m/s accuracy at 5 m/s and a scale graduation of 1 m/s.
- F. Platform scale or scales to measure individual wheel loads. Platform scale or scales shall have a minimum capacity of 600 kg per wheel with an accuracy of $\pm 1\%$ of the reading and a scale graduation of 1 kg maximum. Vehicle wheels shall maintain a horizontal level plane while loads are being measured.
- G. Multimeter to measure battery voltage. Minimum range of 90 volts with an accuracy of $\pm 0.5\%$ and a scale graduation of 0.1 volt.
- H. Tire pressure gage to measure tire inflation pressure. Range of 600 kPa with a maximum scale graduation of 10 kPa.

12. PRETEST REQUIREMENTS

GENERAL

- A. Verify COTR approval of contractor's In-house Test Procedure
- B. Verify the training of technicians for performance of this test
- C. Verify the calibration status of test equipment
- D. Review applicable revision of FMVSS 500
- E. Review vehicle Owner's Manual

TEST AREAS

- A. The vehicle shall be kept in a clean, dry, level surfaced area during storage, vehicle inspection, and safety equipment verification.
- B. The ambient temperature for the speed test shall be between 0° C and 40° C.
- C. The wind speed shall not exceed 5 m/s.

12. PRETEST REQUIREMENTS....Continued

- D. The track surface shall produce a peak friction coefficient (PFC) of 0.9 when tested in accordance with ASTM Method E1337-90.
- E. The test track surface shall have no more than a 1% gradient in the direction of testing and not more than a 2% gradient perpendicular to the direction of testing. It shall be free from standing water, contamination by any liquid and foreign objects of any kind, which could affect the speed test.
- F. The test track straightaway shall be at least 2 km in length and at least 3.5 m wide.

VEHICLE PREPARATION

- A. The vehicle shall complete the manufacturer's recommended break-in agenda prior to beginning the performance tests.
- B. All vehicle openings (doors, windows, hood, trunk, convertible top, cargo doors etc.) shall be closed except as required for instrumentation purposes.
- C. The vehicle shall be conditioned in an ambient air temperature within 5° C of the ambient temperature of the speed test area for at least three hours.
- D. Prior to beginning the performance tests, propulsion batteries shall be fully charged as per manufacturer charging instructions. No further charging of any propulsion batteries is permissible.

PERMANENT RECORDING OF DATA

Where permanent trace recording is not required, data shall be recorded on approved report forms. Changes or corrections shall be made by drawing a line through the original entry, which must remain legible, adding the change above or alongside, and initialed.

METRIC UNITS

As a general rule, use of the metric system of weights and measures is preferred. Performance parameters and test conditions in FMVSS 500 are specified in metric units. In this Laboratory Test Procedure metric values may be followed by English units only for reference (not necessarily equal). If test equipment is not available for direct measurement in metric units, the test laboratory shall calculate the exact metric equivalent by means of a conversion factor carried out to at least 5 significant digits before rounding consistent with the specified metric requirement. Metric units shall be used in Final Test Reports.

13. COMPLIANCE TEST EXECUTION

13.1 Visual Inspection

Verify that the LSV is equipped with the required safety equipment and certification labeling. Record data on Data Sheet 1.

- A. Headlamps (S5(b)(1)) - Verify function and describe method of activation.
- B. Front and Rear Turn Signal Lamps (S5(b)(2)) - Describe turn signal lamp lens color and location. Verify function and describe method of activation. Note if system has a self-canceling feature.
- C. Tail lamps (S5(b)(3)) - Note tail lamp lens color. Verify function and describe method of activation.
- D. Stop Lamps (S5(b)(4)) - Note stop lamp color and location. Verify function when the service brake pedal is depressed.
- E. Reflex Reflectors (S5(b)(5)) - The vehicle shall have one red reflector on each side as far to the rear as possible and one red on the rear. Describe reflector material (plastic or tape), color and shape. Note location of reflectors on vehicle.
- F. Mirrors (S5(b)(6)) - The vehicle shall have a driver's side exterior mirror and either a passenger side exterior mirror or an interior mirror. Note mirror location, design (flat or convex), and method for adjustment.
- G. Parking Brake (S5(b)(7)) - Describe type of parking brake (hand lever or foot pedal) and location. Note how brake applies braking force (purely mechanical and/or hydraulic etc.). Verify function by rolling vehicle forward and backward on a level surface without brake applied and then with brake applied.
- H. Windshield (S5(b)(8)) - Windshield shall be marked with "AS-1" or "AS-5" to identify composition. Record any visible labeling.
- I. Vehicle Identification Number (VIN) (S5(b)(9)) - Verify 17 digit alpha-numeric number. Note the location(s) of all VIN's. Ensure all VINs are identical.
- J. Seat Belts (S5(b)(10)) - All seat belts shall be Type 1 (lap) or Type 2 (lap and harness). Record location and type of each seat belt. Document any visible labeling. Labeling shall include year of manufacturer, model, and name or trademark of manufacturer or distributor.
- K. Certification Label - Note location of label and Vehicle Type identified on label

13. COMPLIANCE TEST EXECUTION - continued

13.2 Speed Test

Each LSV must be capable of attaining in 1.6 km more than 32.0 km/hr and not more than 40.0 km/hr in each of both directions on a paved straight and level surface. No adjustment, repair or replacement of any component is allowed after the start of the first performance test. Record data on Data Sheet 2.

- A. Inflate tires to the maximum permissible pressure molded on the tire sidewall.
- B. Using a platform scale or scales measure and record the individual wheel loads, axle loads and UVW.
- C. Determine the weight of the driver and instrumentation, which should be 78 - 90 kg. Ballast if required. If weight of driver and instrumentation without any ballast exceeds 90 kg, the COTR should be consulted for further guidance.
- D. Using a platform scale or scales, measure and record the individual wheel loads, axle loads and vehicle test weight (VTW). Re-check if difference between VTW and UVW + driver, instrumentation and ballast (if used) weight is greater than 2 kg.
- E. Verify that all pretest conditions have been met and required pretest data have been recorded.
- F. Verify speed sensor data acquisition system is properly installed and energized.
- G. Move vehicle to starting point without using battery power.
- H. As defined in the owners' manual, set controls for street operation. An LSV may have alternate settings including "golf" or "turf" which limit the maximum speed. If the vehicle has multiple transmission or gear settings, use the control position that attains the highest road speed. If necessary, consult the COTR for further guidance.
- I. Conduct the first 1.6 km (Pass # 1) speed run. From a stationary position, release the service brake/parking brake and immediately press the accelerator control to achieve maximum acceleration. Maintain the accelerator control in the maximum acceleration position the entire length of the track (1.6 km). Steering shall be kept to a minimum during the speed run.
- J. Position the vehicle in preparation for the second speed run (Pass # 2) that must be conducted in the opposite direction and within 10 - 20 minutes of Pass # 1.

13. COMPLIANCE TEST EXECUTION - continued

- K. Verify all speed run data for the entire 1.6 km (Pass #1) was recorded and stored. Ensure all available data required on data sheet # 2 has been recorded. If speed run data was not recorded and stored, the speed runs test should be cancelled. A retest must be conducted after the test instrumentation problem is resolved and the vehicle propulsion batteries have been recharged.
- L. Repeat paragraphs F. through I. for the second 1.6 km speed run (Pass # 2).
- M. Verify all speed run data for the entire 1.6 km (Pass #2) was recorded and stored. Ensure all available data required on data sheet # 2 has been recorded. If speed run data was not recorded and stored the speed run test should be cancelled. A retest of both speed runs (Pass #1 and Pass #2) must be conducted after the test instrumentation problem is resolved and the vehicle propulsion batteries are recharged.
- N. Within 20 minutes after completion of the second speed test run (Pass #2), conduct a field calibration check of the speed sensor data acquisition system and record required data. The test track shall be marked a known distance no less than 800 meters. For the first field calibration check, position the vehicle such that the front tires are centered over the zero meter mark on the track.
- O. Verify speed sensor data acquisition system is properly installed and energized. From a stationary position, release the service brake/parking brake and press the accelerator control to achieve a slow constant speed of 5 - 10 km/hr. Maintain the constant speed over the marked track length. Steering shall be kept to a minimum during the field calibration check.
- P. Approaching the end of the marked track length, vehicle speed should be reduced gradually to stop the vehicle such that the front tires are centered on the final meter mark on the track. Record the data acquisition system measured distance traveled to the closest 0.1 m. Calculate the system error factor.
- Q. Position the vehicle in preparation for the second field calibration check that must be conducted in the opposite direction and within 10 - 20 minutes of the first field calibration check.
- R. Repeat paragraphs N. through P. for the second field calibration check.
- S. Determine the average error factor. If the average error factor exceeds $1.00 \pm .01$ the data acquisition system should be re-calibrated, the field calibration distance re-measured, and other possible causes investigated. Consult the COTR for further guidance.
- T. Apply average field calibration error factor to observed speed data.

14. POST TEST REQUIREMENTS

After the required tests are completed, the contractor shall:

- A. Verify all instrumentation, data sheets and photographs.
- B. Plot speed data against time and distance for final report and identify maximum and minimum (after initial acceleration) speed points. Include in final report a printout of speed run data including speed at each 1-second interval, distance traveled, and time.
- C. Complete the Vehicle Condition report form including a word description of its posttest condition.
- D. Copy applicable pages of the vehicle Owner's Manual for attachment to the final test report.
- E. Move the test vehicle to a secure area.
- F. Place all original records in a secure and organized file awaiting test data disposition.

15. REPORTS

15.1 MONTHLY STATUS REPORTS

The contractor shall submit a monthly Test Status Report and a Vehicle Status Report to the COTR. The Vehicle Status Report shall be submitted until all vehicles are disposed of. Samples of the required reports are found in the report forms section.

15.2 APPARENT TEST FAILURE

Any indication of a test failure shall be communicated by telephone or to the COTR within 24 hours with written notification mailed within 48 hours (Saturday and Sunday hours excluded). A Notice of Test Failure (see report forms section) with a copy of the particular compliance test data sheet(s) and preliminary data plot(s) shall be included. If possible repeat that portion of the test where the failure was noted to ensure that there is a test failure. In the event of a test failure, a posttest calibration check of some critically sensitive test equipment and instrumentation may be required for verification of accuracy. The necessity for the calibration shall be at the COTR's discretion and shall be performed without additional costs to the OVSC.

15.3 FINAL TEST REPORTS

15.3.1 COPIES

In the case of an apparent test failure, Six (6) copies of the Final Test Report shall be submitted to the COTR for acceptance within 3 weeks of test completion. The Final Test Report format to be used by all contractors can be found in the "Report Section".

Where there has been no indication of an apparent noncompliance, three (3) copies of each Final Test Report shall be submitted to the COTR for acceptance within 3 weeks of test completion. No payment of contractor's invoices for conducting compliance tests will be made prior to the Final Test Report acceptance by the COTR. Contractors are requested to NOT submit invoices before the COTR is provided with copies of the Final Test Report. Contractors are required to submit for the first test conducted a draft Test Report within 3 weeks after the first compliance test is conducted. The contractor and the COTR will then be able to discuss the details of both test conduct and report content early in the compliance test program. For subsequent tests no draft report is required, only a final report should be submitted. Contractors are required to PROOF READ all Final Test Reports before submittal to the COTR. The OVSC will not act as a report quality control office for contractors. Reports containing a significant number of errors will be returned to the contractor for correction, and a "hold" will be placed on invoice payment for the particular test.

15. REPORTS....Continued

15.3.2 REQUIREMENTS

The Final Test Report, associated documentation (including photographs), is relied upon as the chronicle of the compliance test. The Final Test Report will be released to the public domain after review and acceptance by the COTR. For these reasons, each final report must be a complete document capable of standing by itself. The contractor should use DETAILED descriptions of all compliance test events. Any events that are not directly associated with the standard but are of technical interest should also be included. The contractor should include as much DETAIL as possible in the report.

Instructions for the preparation of the first three pages of the final test report are provided for standardization.

15.3.3 FIRST THREE PAGES

A. FRONT COVER

A heavy paperback cover (or transparency) shall be provided for the protection of the final report. The information required on the cover is as follows:

- (1) Final Report Number such as 500-ABC-0X-001 where
 500 is the FMVSS tested
 ABC are the initials for the laboratory
 0X is the Fiscal Year of the test program
 001 is the Group Number (001 for the 1st test,
 002 for the 2nd test, etc.)

- (2) Final Report Title And Subtitle such as

SAFETY COMPLIANCE TESTING FOR FMVSS 500
 Low-Speed Vehicles

* * * * *

XYZ Bus manufacturer
 200X Carrier
 NHTSA No. CX1401

- (3) Contractor's Name and Address such as

COMPLIANCE TESTING LABORATORIES, INC.
 4335 West Dearborn Street
 Detroit, Michigan 48090

NOTE: DOT SYMBOL WILL BE PLACED BETWEEN ITEMS (3) AND (4)

15. REPORTS....Continued

- (4) Date of Final Report completion
- (5) The words "FINAL REPORT"
- (6) The sponsoring agency's name and address as follows

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Safety Assurance
Office of Vehicle Safety Compliance
400 Seventh Street, SW
Room 6111 (NSA-30)
Washington, DC 20590

15. REPORTS....Continued**B. FIRST PAGE AFTER FRONT COVER**

A disclaimer statement and an acceptance signature block for the COTR shall be provided as follows

This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

Prepared By: _____

Approved By: _____

Approval Date: _____

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By: _____

Acceptance Date: _____

15. REPORTS....Continued**C. SECOND PAGE AFTER FRONT COVER**

A completed Technical Report Documentation Page (Form DOT F1700.7) shall be completed for those items that are applicable with the other spaces left blank. Sample data for the applicable block numbers of the title page follows.

Block 1 — REPORT NUMBER

500-ABC-0X-001

Block 2 — GOVERNMENT ACCESSION NUMBER

Leave blank

Block 3 — RECIPIENT'S CATALOG NUMBER

Leave blank

Block 4 — TITLE AND SUBTITLE

Final Report of FMVSS 500 Compliance Testing of 200X XYZ Carrier,
NHTSA No. CX1401

Block 5 — REPORT DATE

March 1, 200X

Block 6 — PERFORMING ORGANIZATION CODE

ABC

Block 7 — AUTHOR(S)

John Smith, Project Manager
Bill Doe, Project Engineer

Block 8 — PERFORMING ORGANIZATION REPORT NUMBER

ABC-DOT-XXX-001

15. REPORTS....Continued**Block 9 — PERFORMING ORGANIZATION NAME AND ADDRESS**

ABC Laboratories
405 Main Street
Detroit, MI 48070

Block 10 — WORK UNIT NUMBER

Leave blank

Block 11 — CONTRACT OR GRANT NUMBER

DTNH22-0X-D-12345

Block 12 — SPONSORING AGENCY NAME AND ADDRESS

US Department of Transportation
National Highway Traffic Safety Administration
Safety Assurance
Office of Vehicle Safety Compliance (NSA-30)
400 Seventh Street, SW, Room 6111
Washington, DC 20590

Block 13 — TYPE OF REPORT AND PERIOD COVERED

Final Test Report
Feb. 15 to Mar. 15, 200X

Block 14 — SPONSORING AGENCY CODE

NSA-30

Block 15 — SUPPLEMENTARY NOTES

Leave blank

15. REPORTS....Continued

Block 16 — ABSTRACT

Compliance tests were conducted on the subject 200X XYZ Carrier in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-500-0X for the determination of FMVSS 500 compliance.

Test failures identified were as follows:

None

NOTE: Above wording must be shown with appropriate changes made for a particular compliance test. Any questions should be resolved with the COTR.

Block 17 — KEY WORDS

Compliance Testing
Safety Engineering
FMVSS 500

Block 18 — DISTRIBUTION STATEMENT

Copies of this report are available from —

NHTSA Technical Information Services (TIS)
Room 5108 (NAD-40)
400 Seventh St., SW
Washington, DC 20590
Telephone No.: 202-366-4946

Block 19 — SECURITY CLASSIFICATION OF REPORT

Unclassified

Block 20 — SECURITY CLASSIFICATION OF PAGE

Unclassified

15. REPORTS....Continued

Block 21 — NUMBER OF PAGES

Add appropriate number

Block 22 — PRICE

Leave blank

15.3.4 TABLE OF CONTENTS

The final test report Table Of Contents shall include the following as a minimum:

- Section 1 — Purpose of Compliance Test
- Section 2 — Test Procedure and Discussion of Results
- Section 3 — Compliance Test Data including Speed Data Plots
- Section 4 — Test Equipment List and Calibration Information
- Section 5 — Photographs
- Section 6 — Notice of Test Failure (if applicable)
- Section 7 — Vehicle Owner's Manual (applicable pages)

16. DATA SHEETS**FMVSS 500 - LSV INFORMATION AND TEST SUMMARY**

TEST LAB: _____ CONTRACT NO: _____

VEHICLE MAKE/MODEL/YEAR: _____

NHTSA No.: _____ VIN: _____ DATE OF MFG: _____

TYPE PROPULSION: _____ SEATING CAPACITY: _____

GVWR _____ GAWR FRONT _____ GAWR REAR _____

DEALER INSTALLED ACCESSORIES: _____

TIRE TYPE and SIZE: _____

Safety Equipment	Pass	Fail
Headlamps (S5(b)(1))		
Turn signal lamps, front and rear (S5(b)(2))		
Tail lamps (S5(b)(3))		
Stop lamps (S5(b)(4))		
Reflex reflectors, one red on each side, one on rear (S5(b)(5))		
Drivers side exterior mirror (S5(b)(6))		
Passenger side exterior mirror or interior mirror (S5(b)(6))		
Parking brake (S5(b)(7))		
Windshield, AS-1 or AS-5 composition (S5(b)(8))		
Vehicle Identification Number (VIN) (S5(b)(9))		
Seat belt assemblies - Type 1 or 2 (S5(b)(10))		
Certification label (Part 567)		

Maximum Speed Test	Pass	Fail
Maximum Speed (S5(a)) _____ km/hr (more than 32.0 km/hr and not more than 40.0 km/hr)		

Remarks:

16. DATA SHEETS....Continued**FMVSS 500 - DATA SHEET 1 (sheet 1 of 3)**

VEHICLE MAKE/MODEL/YEAR: _____

NHTSA No.: _____

TEST DATE: _____

Headlamps:

Method of Activation: _____

Function (yes/no): _____

Turn Signals: [Front and Rear required]

Description (color and location): _____

Method of Activation: _____

Function (yes/no): _____ Self canceling feature (yes/no): _____

Tail lamps:

Description (lens color): _____

Method of Activation: _____

Function (yes/no): _____

Stop Lamps:

Description (color and location): _____

Method of Activation: _____

Function (yes/no): _____

Reflex Reflectors: [requirement: one red on each side as far to the rear as practicable, and one red on the rear]

Description (color, material, and shape): _____

Location: _____

16. DATA SHEETS....Continued**FMVSS 500 - DATA SHEET 1 (sheet 2 of 3)**

Mirrors: [requirement: exterior driver's side mirror and either an exterior passenger side mirror or an interior mirror]

Description (flat or convex): _____

Location: _____

Method for Adjustment: _____

Parking Brake:

Description (type): _____

Location: _____

Method of Activation and Release: _____

Function (yes/no): _____

Windshield: [requirement: AS-1 or AS-5 composition]

Labeling: _____

Vehicle Identification Number (VIN): [requirement: 17 digit alpha-numeric number]

Location(s): _____

Seatbelts: [requirement: Type 1 or type 2 belts conforming to FMVSS 209]

Type: _____

Labeling: _____

Location: _____

16. DATA SHEETS....Continued**FMVSS 500 - DATA SHEET 1 (sheet 3 of 3)****Certification Label:**

Vehicle Type identified on Label: _____

Location: _____

Certification Statement (yes/no): _____

REMARKS:

RECORDED BY: _____

DATE: _____

APPROVED BY: _____

DATE: _____

16. DATA SHEETS....Continued**FMVSS 500 - DATA SHEET 2 (sheet 1 of 2)**

VEHICLE MAKE/MODEL/YEAR: _____

NHTSA No.: _____

TEST DATE: _____

Unloaded Vehicle Weight (UVW):

LF Wheel _____ kg

RF Wheel _____ kg

Front Axle _____ kg

LR Wheel _____ kg

RR Wheel _____ kg

Rear Axle _____ kg

Total Vehicle _____ kg

Weight of Driver, Instrumentation and required ballast: _____ kg (78 - 90 kg)

Vehicle Test Weight (UVW + weight of driver, instrumentation and required ballast):

LF Wheel _____ kg

RF Wheel _____ kg

Front Axle _____ kg

LR Wheel _____ kg

RR Wheel _____ kg

Rear Axle _____ kg

Total Vehicle _____ kg

Actual Tire Inflation Pressure: LF _____ kPa RF _____ kPa LR _____ kPa RR _____ kPa

Maximum Tire Inflation Pressure from tire sidewall: Front _____ kPa Rear _____ kPa

Vehicle Conditioning: Start Time _____ End Time _____ Duration _____ (3 hr. min)
Start Temp. _____ °C End Temp. _____ °C Delta Temp _____ °C (5°Cmax)

Ambient Temperature: Pass 1 _____ °C

Pass 2 _____ °C

Maximum Wind Speed: Pass 1 _____ m/s

Pass 2 _____ m/s

Description of Vehicle Openings: _____

Vehicle Break-in conducted (yes/no/unknown): _____

Vehicle Odometer and/or Hour meter reading: _____

Start Time: Pass #1 _____
Pass #2 _____End Time: Pass #1 _____
Pass #2 _____Vehicle Charge Level Meter, % (if applicable): Start, Pass #1 _____ End, Pass #1 _____
(standard on-board vehicle meter) Pass #2 _____ Pass #2 _____Measured Battery Voltage, Volts (if applicable): Start, Pass #1 _____ End, Pass #1 _____
(test laboratory measured with voltmeter) Pass #2 _____ Pass #2 _____

16. DATA SHEETS....Continued

FMVSS 500 - DATA SHEET 2 (sheet 2 of 2)

Maximum Vehicle Speed Data

Pass	Maximum Speed Recorded (km/hr)	Maximum Speed Adjusted* (km/hr)	Time Between Passes (minutes)
Pass # 1 (1 st 1.6 km)			
Pass # 2 (2 nd 1.6 km)			

* The adjusted maximum speed is the product of the maximum speed recorded and the speed measuring instrumentation error factor determined from the field calibration check.

Speed Sensor Data Acquisition System Field Calibration

	Check No. 1 (meters)	Check No. 2 (meters)
Known Distance (KD)		
Measured Distance (MD)		
Error Factor (KD/MD)		
Average Error Factor - average of two checks above		

Pass

Fail

Maximum Speed Adjusted

(more than 32.0 km/hr and not more than 40.0 km/hr)

REMARKS:

RECORDED BY: _____

DATE: _____

APPROVED BY: _____

DATE: _____

17. FORMS

LABORATORY NOTICE OF TEST FAILURE TO OVSC

FMVSS NO.: 500

TEST DATE: _____

LABORATORY: _____

CONTRACT NO.: _____ ; DELV. ORDER NO.: _____

LABORATORY PROJECT ENGINEER'S NAME: _____

TEST VEHICLE DESCRIPTION: _____

VEHICLE NHTSA NO.: _____ ; VIN: _____

VEHICLE MANUFACTURER: _____

TEST FAILURE DESCRIPTION: _____

FMVSS REQUIREMENT, PARAGRAPH §____ : _____

NOTIFICATION TO NHTSA (COTR): _____

DATE: _____ ; BY: _____

REMARKS:

17. FORMS....Continued

MONTHLY TEST STATUS REPORT
FMVSS 500

DATE OF REPORT: _____

No.	NHTSA No., MAKE & MODEL	SCHEDULED COMPLIANCE TEST START DATE	COMPLETED COMPLIANCE TEST DATE	PASS/ FAIL	DATE REPORT SUBMITTED	DATE INVOICE SUBMITTED	INVOICE PAYMENT DATE
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

17. FORMS....Continued**MONTHLY VEHICLE STATUS REPORT****FMVSS 500****DATE OF REPORT: _____**

No.	NHTSA No., MAKE & MODEL	DATE OF DELIVERY	TEST COMPLETE DATE	SHIPMENT DATE	CONDITION OF VEHICLE
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					